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MOBILE TELEPHONE-BASED SYSTEM AND METHOD FOR AUTOMATED DATA INPUT

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CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application is related to U.S. Patent Application Serial No. [Attorney Docket No. [LUCT-124618] to Chambers, *et al.*, entitled "System and Method Employing a Mobile Telephone to Retrieve Information Regarding an Article," commonly assigned with the present invention, filed concurrently herewith and incorporated herein by reference.

TECHNICAL FIELD OF THE INVENTION

[0002] The present invention is directed, in general, to wireless telecommunications and, more specifically, to a mobile telephone-based system and method for automated data input.

BACKGROUND OF THE INVENTION

[0003] If a person wants to provide information printed on a document, such as on a business card, into a certain database, currently this is done by initially using an external scanner to get the information in a digital format and by then entering the

scanned information into the database, almost always with the need of intermediate processing steps. Because such scanners and other equipment that may be required tends to be bulky and not easily transported, it is typically the case that the document is better brought to the scanner and not the other way around. Unfortunately, bringing the scanner to the document requires forethought which forecloses spontaneous opportunities to obtain data, and bringing the document to the scanner may not be possible.

[0004] On the other hand, the information on the document may be directly entered into a database manually. However, problems involved therewith are, for example, the need of an expensive separate additional equipment and/or the consumed amount of time needed for entering the information into a certain database.

[0005] What is needed in the art is an automated way to input information printed in a document into a certain database, in particular in an easy, low cost, fast and flexible manner.

SUMMARY OF THE INVENTION

[0006] To address the above-discussed deficiencies of the prior art, the present invention provides a system for, and method of automated data input that employs a mobile telephone as an input device.

[0007] In one aspect, the present invention provides a system for automated data input. In one embodiment, the system includes: (1) a mobile telephone having a camera configured to generate an image of a document that contains the data, (2) a processing server adapted to receive the document via a wireless communication network, extract the data from the image and arrange the data according to a format and (3) a database, associated with the interpreter, that receives and stores the data according to the format.

[0008] In another aspect, the present invention provides a method of automated data input. In one embodiment, the method includes: (1) generating an image of a document that contains the data with a mobile telephone having a camera, (2) receiving the document via a wireless communication network, (3) extracting the data from the image, (4) arranging the data according to a format and (5) storing the data in a database according to the format.

[0009] The foregoing has outlined, rather broadly, preferred and alternative features of the present invention so that those skilled

in the art may better understand the detailed description of the invention that follows. Additional features of the invention will be described hereinafter that form the subject of the claims of the invention. Those skilled in the art should appreciate that they can readily use the disclosed conception and specific embodiment as a basis for designing or modifying other structures for carrying out the same purposes of the present invention. Those skilled in the art should also realize that such equivalent constructions do not depart from the spirit and scope of the invention in its broadest form.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] For a more complete understanding of the present invention, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, in which:

[0011] FIGURE 1 illustrates a schematic diagram of a mobile telephone-based system for automated data input constructed according to the principles of the present invention; and

[0012] FIGURE 2 illustrates a flow diagram of a mobile telephone-based method of automated data input carried out according to the principles of the present invention.

DETAILED DESCRIPTION

[0013] Referring concurrently to FIGUREs 1 and 2, illustrated are a schematic diagram of a mobile telephone-based system for automated data input constructed according to the principles of the present invention and a flow diagram of a mobile telephone-based method of automated data input carried out according to the principles of the present invention.

[0014] According to FIGURE 1, a mobile telephone 100 is depicted having a photo camera 101 mounted to the mobile telephone 100. A document 200 contains data 201 that is desired to be provided to a database. For the following description the document is assumed to be a business card 200 with contact data 201 printed thereon.

[0015] If the user of the mobile telephone 100 wants to provide the contact data 201 of the business card 200 to a specific contact database of the mobile telephone 100, a picture of the contact data 201 is recorded, as indicated by reference sign 1, by use of the camera 101 of the mobile telephone 100. The visual record of the contact data 201 then is transmitted via air link, as indicated by reference sign 2, through at least one wireless communication network 300 to a processing server 400, for example a web-based server providing a processing service for processing the transmitted image and to extract the contact data 201 from the image of the business card 201 (document) by recognizing the

contact data 201 therein.

[0016] For the server-based recognition of the contact data 201, the illustrated embodiment of the processing server 400 uses an optical character recognition system, which is, in the illustrated embodiment implemented by software elements, though hardware recognition equipment is certainly within the scope of the present invention. However, in principle, any other known or future image processing system adapted to recognize data embedded within the image may be used for the processing server 400 based processing and recognition functionality. Moreover, the illustrated processing server 400 additionally uses a spelling correction system for recognizing spelling mistakes and/or errors caused by the record and/or the transmission.

[0017] Once the image of the contact data 201 is correspondingly received, the contact data 201 of the business card 200 is recognized (extracted therefrom) and transmitted back, as indicated by reference sign 3 to the mobile telephone 100. At the mobile telephone 100, the received data, as indicated by reference sign 4, may be easily entered into a database (not shown) contained in the mobile telephone 100, for example by pressing a corresponding key or key sequence of the keypad 102 of the mobile telephone 100. To further support the entry, the processing server 400 may put the recognized contact data 201 prior to its transmission 3 into a common database format or in response to data about a certain

format, in particular a database format, that is received by the processing server 400 into said certain format. Depending on specific applications for such contact data 201, the initial identification of the mobile telephone 100 may be based, for example, on an International Mobile Subscriber Identification (IMSI). On the other hand, the user of the mobile telephone 100 may send additional data about the desired format. In particular, if the contact data 201 is already put into a desired format by the processing server 400, the mobile telephone 100 may be programmed automatically to perform the final entry into the desired database in response to the receipt of the contact data 201 at the mobile telephone 100.

[0018] The transmission of the record, possibly together with additional processing data, from the mobile telephone 100 to the processing server 400 providing the processing service as well as the transmission of the recognized contact data 201 back to the mobile telephone 100 is, in the illustrated embodiment, performed by use of a Multimedia Message Service (MMS) or by use of an e-mail message, perhaps as an attachment thereto. In this regard, it is apparent for a person skilled in the art, that both the mobile telephone 100 and the processing server 400 should be adapted accordingly by the respective interfaces operating for example on a General Packet Radio Service (GPRS) or a Universal Mobile Telecommunications System (UMTS) standard. However, in particular

with regard to the transmission of the recognized data, even a Short Message Service (SMS) may be used.

[0019] Since a provider possibly wants to charge his server-based service of recognizing data, the processing server 400 may transmit accompanying charge data to a charging system for charging the service use. Such charge data can be directly sent back to the mobile telephone 100 together with the analyzed document data, especially in case a prepaid card is implemented within the mobile telephone 100 or may be transmitted to an external charging system for periodically debiting an account assigned to the mobile telephone or to its registered user.

[0020] Although the invention is described with regard to a specific embodiment, the invention is covering several modified embodiments, without leaving the scope of protection as defined by the appended set of claims.

[0021] For example, the internal or externally connectable camera of the mobile communication apparatus may be additionally or alternatively designed as being a video camera, so that the record is at least a part of a video sequence. Instead of the described mobile telephone, an other mobile communication apparatus may be used by the invention, for example a Personal Digital Assistant (PDA) or a Mobile Digital Assistant (MDA).

[0022] The invention furthermore covers embodiments wherein the possible additional processing data sent from the mobile

communication apparatus 100 to the processing server 400 relates to a subscriber address of an other apparatus having accessibility to the at least one wireless communication network 300 and to which the recognized data has to be sent back for entering into a database assigned to said other apparatus in a similar manner. Thus, the processing server 400 may forwards the contact data 201 extracted from the business card 200 to a destination in accordance with received instructions.

[0023] The record may be pre-processed prior to its transmission to the processing server 400, for example by the transformation into a format adapted for transmission and/or for the processing server 400. In particular a special application may be provided within the mobile telephone 100 for handling the data transfer, *e.g.*, by using a TCP/IP data link and/or the processing server 400 may provide a special data link format to interact with the mobile telephone 100. Moreover, a plurality of different records may be stored within a memory of the mobile telephone 100 prior to transmit the records all together to the processing server 400.

[0024] Although the present invention has been described in detail, those skilled in the art should understand that they can make various changes, substitutions and alterations herein without departing from the spirit and scope of the invention in its broadest form.